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One some further Neotropical Pyrgodesmidae, partly from the environs of Manaus, Central Amazonia, Brazil (Diplopoda, Polydesmida)

by

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Abstract

To describe and properly allocate *Enantigonodesmus adisi* n.sp. and *Docodesmus amazonicus* n.sp., both from nonflooded upland forest near Manaus, Amazonia, Brazil, the holotypes of *Enantigonodesmus planus* SILVESTRI, 1898 and *Stictodesmus laetus* SILVESTRI, 1898 have been revised, both deriving from near Carácas, Venezuela. Based on the particularly complex gonopod structure, the oligotypic *Enantigonodesmus* SILVESTRI, 1898 is considered as one of the most disjunct and nicely defined genera among Pyrgodesmidae, while the discovery in Central Amazonia of the prolific, rather strongly variable, chiefly Caribbean *Docodesmus* COOK, 1896 is rather surprising zoogeographically.

Keywords: **Diplopoda, Pyrgodesmidae, Venezuela, Amazon, Manaus.**

Resumo

Os holótipos de *Enantigonodesmus planus* SILVESTRI, 1898 e *Stictodesmus laetus* SILVESTRI, 1898, ambos oriundos de Carácas, foram revisados para descrever e devidamente classificar *Enantigonodesmus adisi* n.sp. e *Docodesmus amazonicus* n.sp., ambos de florestas de terra firme perto de Manaus, Amazônia, Brasil. Baseado nas estruturas gonopodais particularmente complexas, o oligotípico *Enantigonodesmus* SILVESTRI, 1898 é considerado um dos gêneros mais disjuntos e bem definidos entre os Pyrgodesmidae, enquanto que o descobrimento do prolífico, muito mais variável e principalmente caribéneo *Docodesmus* COOK, 1896 na Amazônia Central é surpreendente em ponto de vista zoogeográfico.

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Introduction

To continue my previous contribution to the pyrgodesmid fauna of Central Amazonia (cf. GOLOVATCH 1996), the present paper is chiefly devoted to the description of further two new species of Pyrgodesmidae taken by Dr. Joachim ADIS and his collaborators during their on-going investigations of arthropod assemblages of the inundation and upland forests at Manaus, Brazil. However, to properly allocate these new forms, a revision of the types of two old species has been undertaken.

All new material treated here has been taken by means of soil extraction in a secondary tropical upland forest at Rio Tarumã Mirím (for more information see ADIS 1992). Both holotypes and the bulk of paratypes have been deposited in the Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Brazil, while a few paratypes have been retained for the collections of the Zoological Museum of the State University of Moscow (ZMUM), Senckenberg Museum, Frankfurt a. M. (SMF), Zoologisk Museum, University of Copenhagen (ZMUC), Muséum d'Histoire naturelle, Geneva (MHNG), and J. ADIS (CA). The types of both revised species of SILVESTRI (1898) have been returned to ZMUC.

Taxonomic part

Enantigonodesmus planus SILVESTRI, 1898 (Figs. 1-7)

Material: Holotype ♂ (ZMUC), Venezuela, Carácas, Rio Catuche, 10.01.1891; leg. MEINERT.

Diagnosis: Differs from *E. adisi* n.sp., the only other congener known to date (see below), chiefly by the obviously 12-lobed front margin of the collum, somewhat more strongly pilose and tuberculate metaterga, 4-lobulated metatergum 2, and certain minor details of gonopod structure.

Description: Length ca. 3.5, width 0.75 mm. Coloration in alcohol entirely pallid, yellow-whitish.

Body with 19 segments (♂). Head distinctly granulorugose, vertigial region elevated. Antennae quite strongly clavate, rather short, geniculate between joints 3 and 4; joints 5 and 6 subequal in length and width.

Collum (Fig. 1) usual, flabellate, entirely concealing head from above, perhaps with 12 lobes at an elevated fore edge, both marginal lobulation and dorsal tuberculation being highly obscure. Surface irregularly microgranulate to microtuberculate, dull; micropilosity silvery, very dense and short. Surface of subsequent prozona and ventrolateral parts of metazona microporose/microalveolate, shagreened. Like collum, subsequent metaterga basically extremely delicately and densely microgranulate to microtuberculate, densely micropilose and more or less strongly tuberculate, with usual three transverse rows of very flat, often obscure, polygonal tubercles/bosses dorsally and a number of grains/microtubercles both in between and more laterally; dorsal tuberculation pattern as in Figs. 1-3, trichome silvery and dense. Suture between pro- and metazona microreticulate. Dorsum not very convex; paraterga declivent but remaining considerably higher than level of venter, very prominent, with three (on poreless segments) or four (on segment 2 and subsequent pore-bearing segments) distinct marginal lobulations laterally, with neither distocaudal nor distofrontal crenulations. Front corners of paraterga invariably broadly rounded, their caudal corners mostly more narrowly rounded, never produced behind, on somie 18 considerably more strongly rounded and obtusangular than on preceding somites (Fig. 3). Porosteles absent, pore formula normal; ozopores obscure, placed dorsally between third and fourth lateral lobulations of paraterga Epiproct (Fig. 3) rather short, truncated, fully exposed in dorsal view, directed ventrocaudally, surmounted by a bundle of setae. Subanal scale high, trapeziform, with 1+1 strong setae at caudal corners.

Legs invisible from above, unmodified, tarsi more slender than preceding podomeres. Sterna quite narrow, without modifications.

Gonopods (Figs. 4-7) in situ holding subparallel to each other. Coxite relatively small, subglobose, finely granulate and microsetose, only anteromedially with 2+2 particularly strong macrochaetae in sockets. Telopodite with a relatively small, transverse and more strongly setose prefemur. Acropodite rather slender, distinctly and deeply bipartite, both branches subequal in height, with a minor setigerous process laterobasally in between; anterior branch (**a**) simple, obviously protecting in function, digitiform, only apically subtruncate, blade-like and slightly curved; posterior branch with a gradually attenuating, distally unciform, apically acuminate solenomerite and a lanceolate, more or less midway, caudomesal process (**b**).

Remarks: The genus *Enantigonodesmus* SILVESTRI, 1898, has hitherto remained monobasic, with *E. planus* as type-species. The original description of *E. planus* by SILVESTRI (1898) was so brief and incomplete that ATTEMS (1940) justly referred to *Enantigonodesmus* as an "uncertain genus".

Fortunately, the holotype of *E. planus* is a ♂ still available at ZMUC, thus allowing for its adequate revision to be done.

The above redescription and illustrations show clearly that *Enantigonodesmus* represents a highly disjunt genus possessing particularly complex gonopods: the telopodite is distinctly and deeply bipartite, front process **a** is high and slender while the caudal piece is bifid, with the outer branch forming a simple solenomerite.

Enantigonodesmus adisi n.sp. (Figs. 8-11)

Holotype: ♂ (INPA), Brazil, Edo. Amazônas, environs of Manaus, Terra firme (= nonflooded upland forest), Rio Tarumã Mirím, 3°2'S, 60°17'W, secondary tropical forest (= capoeira), soil extraction, 26.10.1982; leg. J.M. RODRIGUES, J. ADIS et al. - Paratypes: same locality and habitat, 1 ♂ (INPA), 25.08.1982; 2 ♂♂, 3 ♀♀ (ZMUM), 1 ♂ (SMF), 7 ♂♂, 2 ♀♀ (CA), 29.09.1982; 1 ♂, 3 ♀♀ (INPA), 26.10.1982; 1 ♂, 1 ♀ (INPA), 23.11.1982; 2 ♂♂, 1 ♀ (INPA), 29.12.1982; 15 ♂♂, 11 ♀♀, 2 juv. (INPA), 1 ♂, 1 ♀ (ZMUC), 25.04.1983; 5 ♂♂, 6 ♀♀ (INPA), 1 ♂ (MHNG), 26.05.1983; 2 ♂♂, 1 ♀ (INPA), 27.06.1983; 4 ♂♂, 2 ♀♀ (INPA), 26.07.1983; 8 ♂♂, 5 ♀♀ (INPA), 24.08.1983; 1 ♂, 1 ♀ (INPA), 29.09.1983; all leg. J.M. RODRIGUES, J. ADIS et al.

Name: Honours PD Dr. Joachim ADIS, the engine of the whole project.

Diagnosis: Differs from *E. planus*, the type-species and only other congener (see above), mainly by the 10-lobed front margin of the collum, far less strongly pilose and more vaguely tuberculate metaterga, and certain, relatively minor details of gonopod structure.

Description: Length ca. 4-5 (♂♂) to 5-6 mm (♀♀), width of midbody pro- and metazona 0.3-0.35 and 0.6-0.7 (♂♂), 0.4 and 0.75-0.8 mm (♀♀), respectively. Holotype ca. 4.0 mm long and 0.65 mm wide on midbody metazonites. Coloration in alcohol entirely pallid, yellow-whitish.

Body with 19 (♂) or 20 segments (♀). Head distinctly granulorugose, vertigial region strongly elevated. Antennae quite strongly clavate, rather short, geniculate between joints 3 and 4; joint 5 a bit shorter than 6th (this being a relatively rare condition in Pyrgodesmidae as a whole), subequal in width, both forming a club-like structure.

Collum (Fig. 8) usual, flabellate, entirely concealing head from above, with 10 lobes at an elevated fore edge, both marginal lobulations and dorsal tuberculation being highly obscure, lateral corner from almost pointed to narrowly rounded.

All other somatic characters like in *E. planus*, except as follows: metatergal micropilosity scarcely traceable only at higher magnification, while trichome only as short clavate setae retained mainly on top of lateral lobulations, especially strongly reduced middorsally, only somite 20 with a few long subclavate setae dorsally; metatergal tuberculation particularly vague (Figs. 8, 9); only three lobulations of somite 2; caudal incision at base of paraterga very distinct and deep; only penultimate metatergite much more strongly produced caudad.

Gonopods (Figs. 10, 11) basically as in *E. planus*, but front branch **a** considerably higher than subequally high branch **b** and solenomerite, latter supported by a short lateral midway finger on **a**; branch **b** serrate distally, apex of branch **a** somewhat more complex.

Remarks: The allocation of *adisi* n.sp. to *Enantigonodesmus* is far from straightforward, perhaps even provisional, being based mainly of the particulars of gonopod structure. Since the latter appears especially complex (= derived), and the entire generic classification of Pyrgodesmidae is so very badly confused (cf. HOFFMAN 1980; GOLOVATCH 1996), for the time being it seems best to regard both *planus* and *adisi* as congeners belonging to one of the oldest generic names in the family. Indeed, in addition to a good number of somatic features (e.g. relatively strongly obliterated metatergal tuberculation, normal pore formula, absence of porosteles, exposed epiproct, etc.), these forms share a deeply and markedly bipartite gonopod with a very strong and relatively simple front branch (**a**) coupled with a bifid branch **b** supporting a simple, long, lateral solenomerite. By most of these characters, *Enantigonodesmus* appears close to *Docodesmus* COOK, 1896, *Leuritus* CHAMBERLIN, 1923 (see discussion below) as well as to *Araguayadesmus* SCHUBART, 1947. The latter is another Neotropical genus (cf. GOLOVATCH 1996) which, unlike *Enantigonodesmus*, sometimes (in the type species) displays porostele-like structures and, what seems particularly important, always a much more simple, virtually nearly uniramous, caudal branch of the gonopod.

Stictodesmus laetus SILVESTRI, 1898 (Figs. 12-16)

Material: 3 ♀♀ (of which the only intact ♀ is designated as the lectotype herewith), 1 ♀ fragment, 3 juv. (ZMUC), Venezuela, Carácas, La Moka, 12.08.1891; leg. MEINERT.

Description: Length ca. 3.5, width 0.9-1.0 mm. Coloration in alcohol entirely pallid, yellow-whitish.

Body with 20 segments (♀). Head distinctly granulorugose, vertigial region elevated. Antennae quite strongly clavate, rather short, geniculate between joints 3 and 4; joints 5 and 6 subequal in length and width.

Collum (Figs. 12, 15) usual, flabellate, entirely concealing head from above, with 10 distinct lobes at an elevated fore edge, dorsal tuberculation being rather flat. Surface irregularly microgranulate to tuberculate, dull; micropilosity dense, traceable only at high magnification, while trichome sparse, silvery, rather long. Surface of subsequent prozona and ventrolateral parts of metazona microporose/microalveolate, shagreened. Like collum, subsequent metaterga basically extremely delicately and densely microgranulate and more or less strongly tuberculate, with usual three transverse rows of flat, often (especially in anterior 1/2 body) rather obscure, polygonal to rounded, setigerous tubercles/bosses dorsally and a number of grains/microtubercles more laterally; dorsal tuberculation pattern as in Figs. 12-16, trichome also silvery, scattered, long. Suture between pro- and metazona microreticulate. Dorsum very convex; paraterga declivent but remaining somewhat higher than level of venter (Figs. 15, 16), very prominent, with three (on poreless segments) or four (on pore-bearing segments) distinct marginal lobulations laterally, without distofrontal crenulations but with a single deep incision caudally at base of paraterga. Front corners of paraterga invariably broadly rounded, their caudal corners mostly more narrowly rounded, only on a few posteriormost segments particularly narrowly rounded to almost pointed and a little produced behind (Figs. 14, 16). Porosteles absent, pore formula normal; ozopores quite obscure, placed dorsally between third and fourth lateral lobes of paraterga. Epiproct (Fig. 14) rather short, truncated, almost fully exposed in dorsal view, directed more ventrally than caudally, surmounted by a bundle of setae (Fig. 16). Subanal scale high, trapeziform, with 1+1 strong setae at caudal corners.

Legs invisible from above, unmodified, tarsi more slender than preceding podomeres. Sterna quite narrow, without modifications. Epigynal ridge behind legpair 2 like a very low blade poorly and broadly emarginate in the middle and a little elevated as rounded knobs laterally.

Remarks: The genus *Stictodesmus* COOK, 1896, has hitherto been known from two species only: *S. creper* COOK, 1896 (the type-species), from Bogota, Columbia, and the above *S. laetus*. Why *laetus* was assigned to *Stictodesmus* by SILVESTRI (1898), remains rather obscure. Both species were based on ♀♀ (see also below), both differ in the number of somites (19 in *S. creper*, 20 in *S. laetus*), while the number of collar lobulations, the degree of tergal pubescence and some other important characters of *S. creper* had never been mentioned (cf. PETERS 1864; COOK 1896) prior to COOK's (1911) later redefinition of his genus. The only guess why SILVESTRI (1898) brought his *laetus* so close to *creper* might have been, among other things, the probably shared reduced tergal ornamentation, the single caudal incision at base of the paratergite and the location of the ozopores dorsally near the site of division of the paratergal lateral edge into the third and fourth lobulations. Interestingly, by these characteristics *Stictodesmus* strongly resembles *Enantigonodesmus* (see above). With further progress in our knowledge of the Neotropical pyrgodesmid fauna, both these names might even prove to be synonyms. Superficially, judged from the tergal structure, *laetus* also quite strongly reminds of *Coccoelasma* LOOMIS, 1936, monobasic, only with the type-species *C. incisura* LOOMIS, 1936, from Hispaniola. Yet the gonopod structure of this species is apparently much more simple, *Decodesmus*-like (cf. LOOMIS 1936 and below).

To summarize, in the absence of a ♂ topotype, we shall never be able to properly allocate *laetus*, so the above is only a redescription deemed sufficient to adequately match it with topotypic material. A revision of *creper* is badly warranted, too, in which case a ♂ topotype will become likewise mandatory, since the holotype in the Berlin Museum is also a ♀ (cf. MORITZ & FISCHER 1978). In any event, ATEMS (1940) was fully justified when treating *Stictodesmus* among "uncertain genera".

Docodesmus amazonicus n.sp. (Figs. 17-21)

Holotype: ♂ (INPA), Brazil, Edo. Amazônas, environs of Manaus, Terra firme (= nonflooded upland forest), Rio Tarumã Mirím, 3°2'S, 60°17'W, secondary tropical forest (= capoeira), soil extraction, 29.12.1982; leg. J.M. RODRIGUES, J. ADIS et al.

Name: Emphasizes the terra typica and the first format congener to be encountered in Amazonia.

Diagnosis: Differs from congeners by the particularly strongly reduced metatergal ornamentation coupled with certain details of gonopod structure (see also below).

Description: Length ca. 8.5 mm, width of midbody pro- and metazona 0.7 and 1.5 mm, respectively. Coloration rather uniform whitish-yellow, paraterga and venter more pallid.

Body with 20 segments (♂). Head distinctly granulorugose, vertigial region elevated. Antennae quite strongly clavate, rather short, geniculate between joints 3 and 4; joints 5 a little longer than 6th, both with a distodorsal group of bacilliform sensilla, joint 7 with a middorsal knob surmounted by a few sensilla.

Collum (Fig. 17) usual, flabellate, entirely concealing head from above, with 12 distinct lobes at a slightly elevated fore edge, dorsal tuberculation being flat and inconspicuous. Dorsal surface irregularly microgranulate to tuberculate, dull; micropilosity almost untraceable, caudal limbus fringed with dense, conspicuous microvilli. Surface of ventrolateral parts of subsequent metazona microporose/microalveolate, shagreened. Like collum, subsequent metaterga basically extremely delicately and densely microgranulate and more or less vaguely tuberculate, with usual three transverse rows of flat, often rather obscure, polygonal to rounded tuberbles/bosses dorsally and a number of grains/microtubercles more laterally (Figs. 17-19), with neither visible micropilosity nor trichome. Suture between pro- and metazona shallow but evident, microalveolate like prozona. Dorsum relatively slightly convex; paraterga declivent modestly and regularly, remaining considerably higher than level of venter, very prominent, with three (on somite 5 and all poreless segments) or four (on all pore-bearing segments but 5th) distinct marginal lobulations laterally, devoid of distofrontal incisions but supplied with four caudal crenulations. Front corners of paraterga invariably broadly rounded, their caudal corners more narrowly rounded, only on somites 17-19 increasingly strongly produced behind (Fig. 19). Porosteles absent, pore formula normal; ozopores quite obscure, placed dorsally near base of penultimate lateral lobes of paraterga. Epiproct (Fig. 19) short, broadly subtruncate in dorsal view, almost fully exposed in dorsal view, directed ventrocaudally, surmounted by two knobs and a bundle of setae. Subanal scale rather low, almost semi-circular, with 1+1 strong paramedian setae at caudal edge.

Legs almost invisible from above, unmodified, tarsi more slender than preceding podomeres. Sterna quite narrow, without modifications.

Gonopods (Figs. 20, 21) relatively simple, coxites small, telopodites high, slender, digitiform, in situ holding parallel to each other; solenomerite branch short, simple, placed at distal one-third of telopodite.

Remarks: The mainly Caribbean genus *Docodesmus* COOK, 1896, has hitherto been known to comprise the following species: *D. alifer* LOOMIS, 1941, *D. angustus* LOOMIS, 1941, *D. griseus* LOOMIS, 1941, *D. haitiensis* CHAMBERLIN, 1918, *D. parvior* CHAMBERLIN, 1918, *D. semiseptus* LOOMIS, 1936, all from Hispaniola, *D. centralis* SILVESTRI, 1898, from La Guayra near Carácas, Venezuela, *D. cooki* LOOMIS, 1969, supposedly from Tennessee, southern U.S.A., *D. coxalis* LOOMIS, 1975, from Jamaica, *D. cubensis* LOOMIS, 1937, from Cuba, *D. eggletoni* VELEZ, 1965, *D. maldonadoi* VELEZ, 1965, and *D. vidalius* VELEZ, 1965, all from Puerto Rico, *D. grenadae* CHAMBERLIN, 1918, from Grenada, *D. robustus* LOOMIS, 1934, from Tobago, *D. sculpturatus* LOOMIS, 1934, from the Bahamas and Puerto Rico, *D. trinidadensis* CHAMBERLIN, 1918, from Trinidad, and *D. vincentii* (POCOCK, 1894) (the type-species), from St. Vincent (cf. POCOCK 1894; SILVESTRI 1898; CHAMBERLIN 1918; LOOMIS 1934, 1936, 1937, 1941, 1969, 1975; VELEZ 1965, 1967). Most of these species have been keyed by LOOMIS (1969). The status of still one more formal congener, *D. maculatus* (BOLLMAN, 1888), from Cuba, is rather shaky, as the species was first described in *Stenonia* GRAY, 1843, a genus currently recognized as a member of the family Chelodesmidae (cf. HOFFMAN 1980); then the species was reassigned to Platyrhacidae (cf. POCOCK 1894; CHAMBERLIN 1918), and only rather recently, without any explanation, TORRE (1974) transferred it into the pyrgodesmid genus *Docodesmus* (cf. GONZALEZ & GOLOVATCH 1990). Reading carefully the original description of *maculata* BOLLMAN, 1888, leaves one convinced that we do face a pyrgodesmid (cf. BOLLMAN 1888) but not necessarily *Docodesmus*.

Based on the structure of the type-species *vincentii* (cf. POCOCK 1894; COOK 1896), *Docodesmus* is distinguished by the following combination of characters: 20 body segments; collum 10-lobulated; pore formula normal, porosteles absent, ozopores opening dorsally near base of penultimate lateral lobulation; lateral margins of all poriferous paraterga but 5th 4-lobulated, poreless and 5th ones 3-lobulated; caudal margins of paraterga crenulated; metatergal tuberculation relatively modest; sternum between ♂ legpair 10 with a paramedian pair of setigerous tubercles, ♂ coxa 10 with a similar distoventral tubercle; gonopods in situ crossing each other, strongly exposed, telopodites slender und bifid. *D. amazonicus* differs from the above diagnosis only by the lack of modifications on the sternum and coxa of the ♂ segment 8 (same as in all congeners but *vincentii*), the 12-lobulated collum, and the gonopod telopodites in situ holding parallel to each other. However, each of these features in *D. amazonicus* is shared at least with several other congeners, and both latter characters have long been acknowledged as being subject to great infrageneric variation in Pyrgodesmidae (cf. SHEAR 1973; HOFFMAN 1980; GOLOVATCH 1996).

From the obviously very closely related *Leuritus* CHAMBERLIN, 1923, a monobasic genus containing only the type-species *L. termitophilus* CHAMBERLIN, 1923, from Guiana (cf. CHAMBERLIN 1923; SILVESTRI 1947), *Docodesmus amazonicus* differs virtually only in the presence of caudal crenulations on paraterga and of only three lateral lobulations both on poriferous and poreless paraterga. In addition, deviating only in a few relatively minor details of tergal structure, *D. amazonicus* seems to be rather close also to *Coccoelasma* LOOMIS, 1936 (see above), *Cyphotylus* LOOMIS, 1936 (this genus contains only the type-species *C. prolatus* LOOMIS, 1936, from Hispaniola, based on an immature ♂ holotype), *Lobodesmus* LOOMIS, 1936 (again monobasic, with the type-species *L. granosus* LOOMIS, 1936, from Hispaniola) (cf. LOOMIS 1936), as well as a good number of other Neotropical genera/species. Unfortunately, since the entire generic classification of the family is too badly confused, prior to its thorough revision and taking the pattern of allocating *Enantigonodesmus adisi*, I am inclined to formally assign *amazonicus* to one of the oldest generic categories available in polydesmidean nomenclature.

The discovery of a *Docodesmus* in Central Amazonia is quite interesting zoogeographically, for the genus clearly centers in the Caribbean region. However, this impression might prove to be superficial. To seriously consider *D. amazonicus* a peripheral, southern(most), congener, first much of the taxonomic mess concerning Neotropical (and not only) Pyrgodesmidae must be cleared up, coupled with a strong need in describing further numerous, obviously new forms encountered in already available collections alone.

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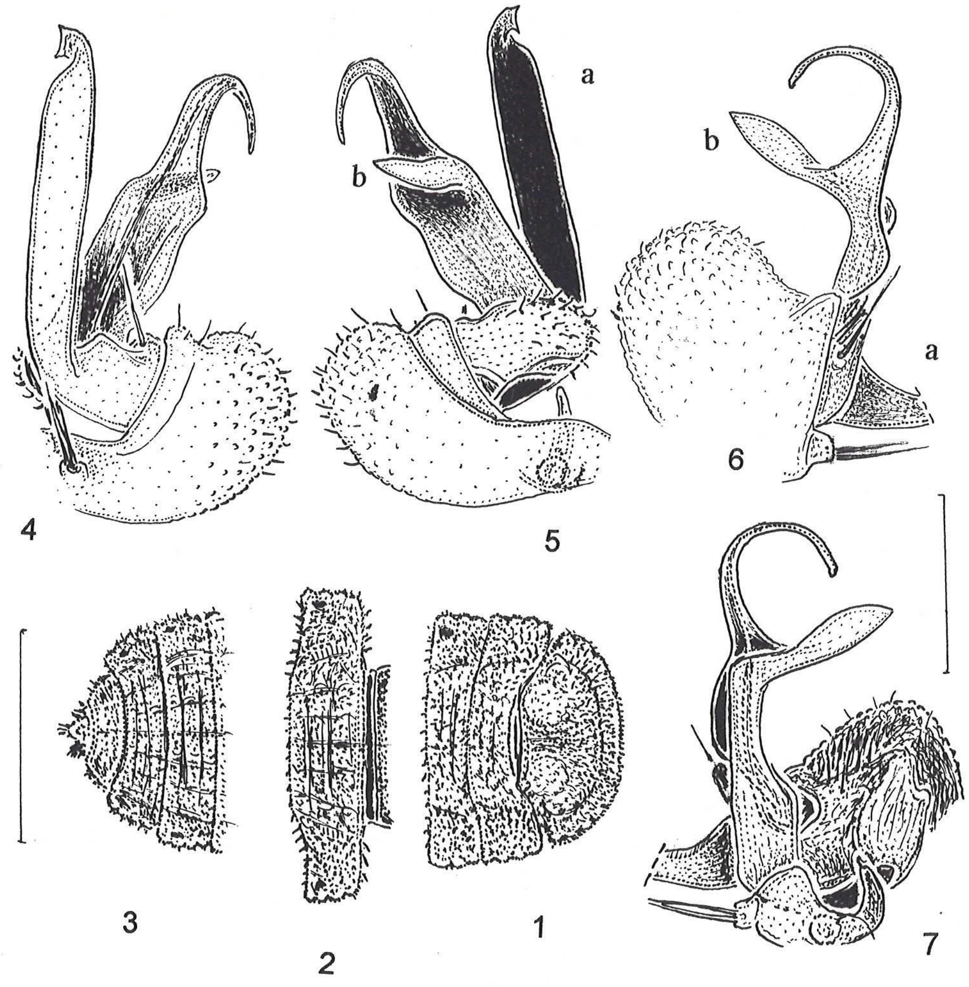
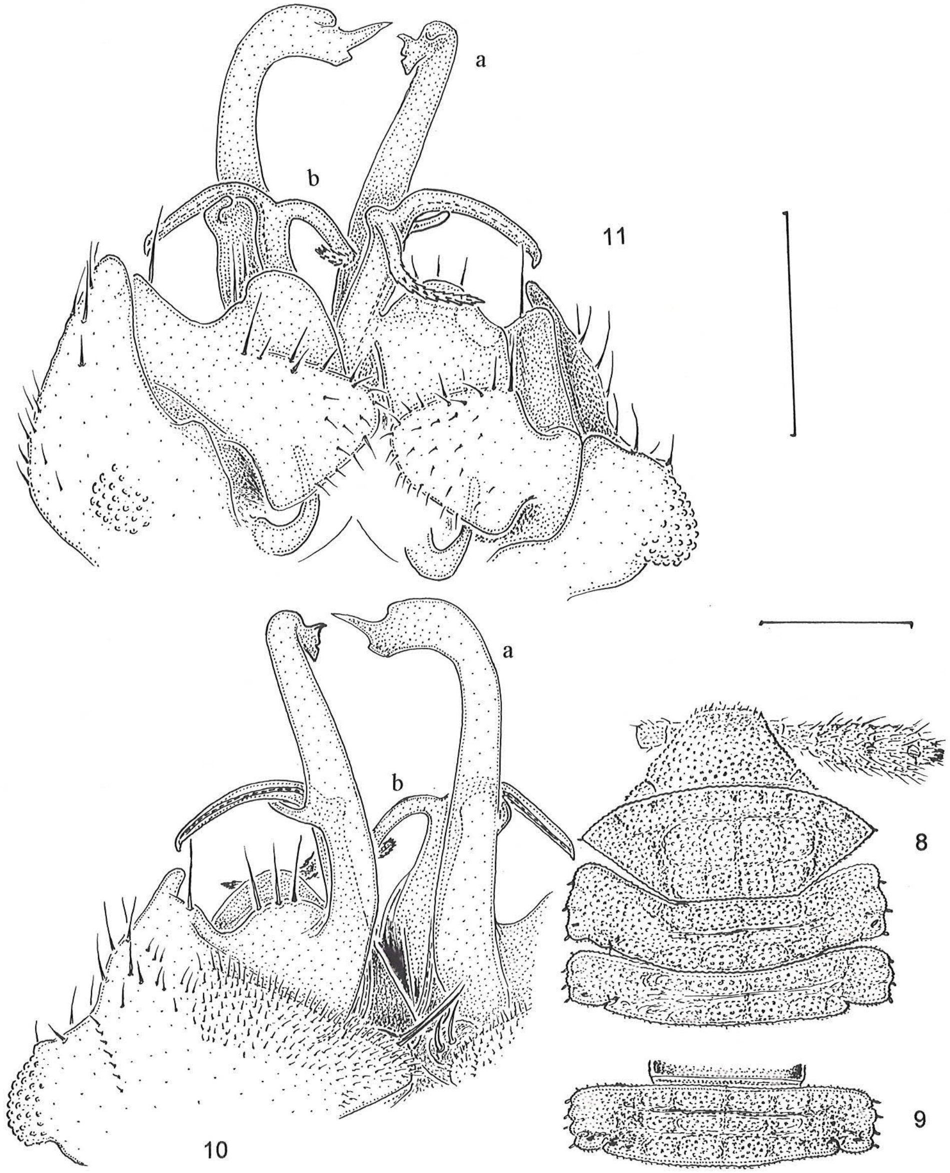
Addendum

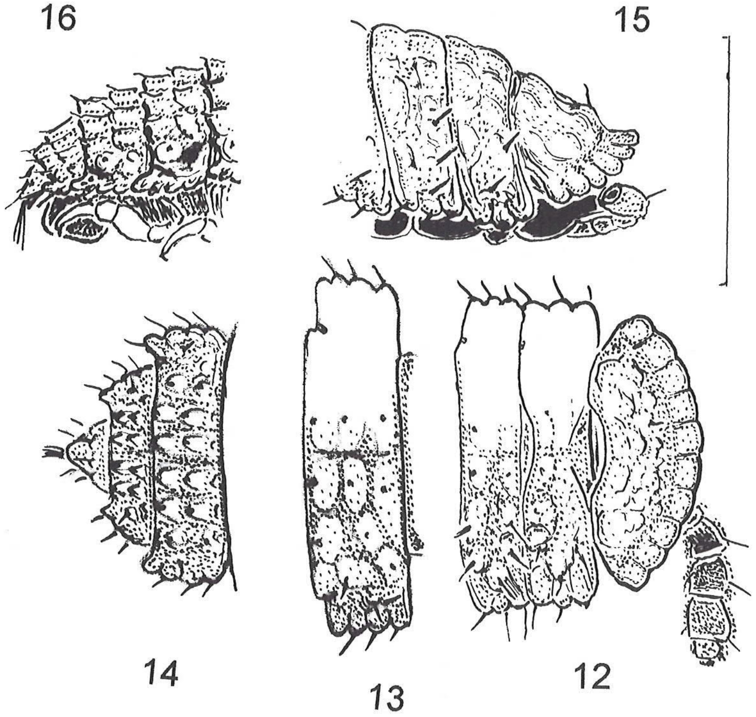
For the sake of completeness, even a fossil formal *Docodesmus* is known from Hispaniola: *D. brodzinskyi* SHEAR, 1981. Unfortunately, due to purely taxonomic reasons, its description based on a single female holotype is particularly incomplete (cf. SHEAR 1981). If one may easily dispute the generic allocation of *D. brodzinskyi*, the record of this unquestioned pyrgodesmid as far back as the early Cenozoic Dominican amber is indeed highly impressive (see SHEAR, W.A. (1981): Two fossil millipeds from the Dominican amber (Diplopoda: Chytodesmidae, Siphonophoridae). - Myriapodologica 1 (8): 51-54).



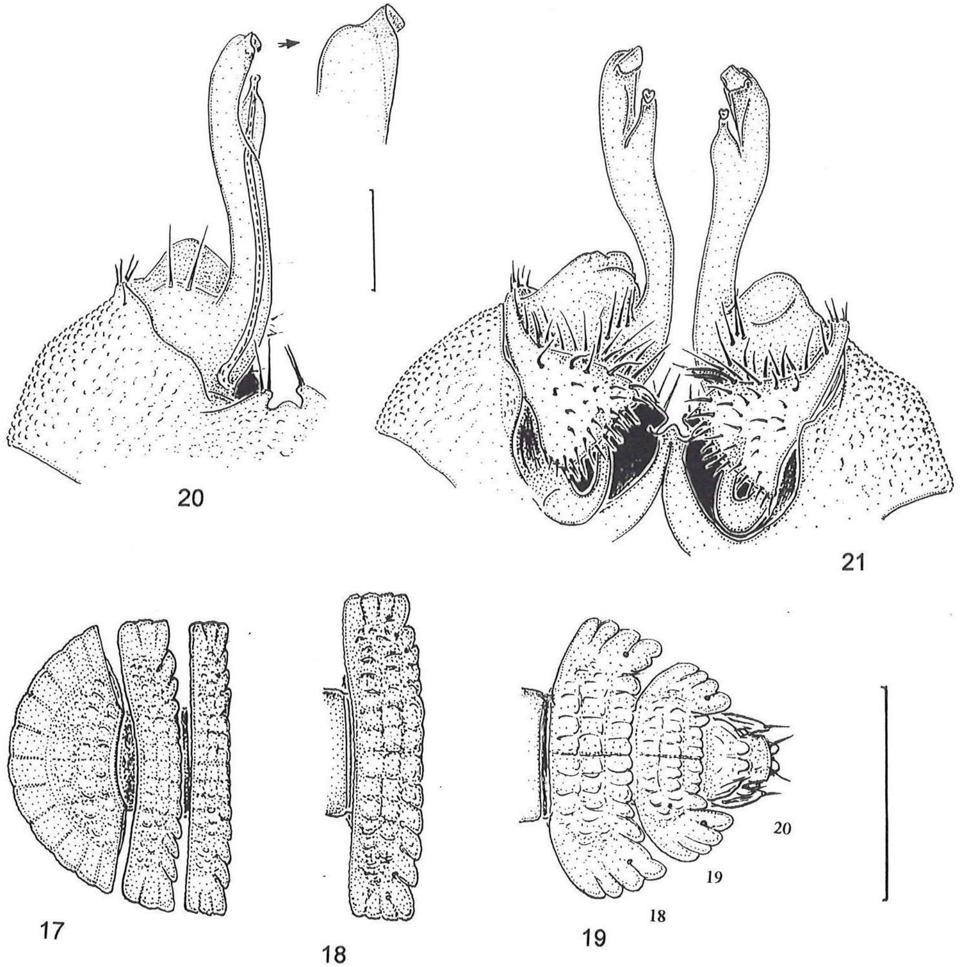
Figs. 1-7:
Enantigonodesmus planus SILVESTRI, 1898, ♂ holotype.
1: anterior body end, dorsal; **2**: body segment 10, dorsal; **3**: caudal body end, dorsal;
4-7: gonopods, frontal, caudal, lateral, and mesal, resp. - Scales 0.5 (1-3) and 0.1 mm (4-7).



Figs. 8-11:
Enantigonodesmus adisi n.sp., ♂ paratype.
8: anterior body end, dorsal; **9**: body segment 10, dorsal; **10** and **11**: gonopods, frontal and caudal, resp. - Scales 0.3 (8, 9) and 0.1 mm (10, 11).



Figs. 12-16:
Stictodesmus laetus SILVESTRI, 1898, ♀ holotype.
12 and **15**: anterior body end, dorsal and lateral, resp.; **13**: body segment 10, dorsal; **14** and **16**: caudal body end, dorsal and lateral, resp. - Scale 0.5 mm.



Figs. 17-21:
Docodesmus amazonicus n.sp., ♂ holotype.
17: anterior body end, dorsal; **18**: body segment 10, dorsal; **19**: caudal body end, dorsal (smaller numerals standing for segment numbers); **20** and **21**: gonopods, frontal and caudal, resp. -
Scales 0.1 (20, 21) and 1.0 mm (17-19).